

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/006338

Box No. I	Basis of the report
1.	<p>With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.</p> <p><input type="checkbox"/> This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:</p> <p><input type="checkbox"/> international search (Rule 12.3 and 23.1(b))</p> <p><input type="checkbox"/> publication of the international application (Rule 12.4)</p> <p><input type="checkbox"/> international preliminary examination (Rule 55.2 and/or 55.3)</p>
2.	<p>With regard to the elements of the international application, this report is based on <i>(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)</i>:</p> <p><input type="checkbox"/> the international application as originally filed/furnished</p> <p><input checked="" type="checkbox"/> the description:</p> <p>pages <u>3-10</u> as originally filed/furnished</p> <p>pages* <u>1, 2</u> received by this Authority on <u>11.12.2004 with letter of 25.11.2004</u></p> <p>pages* _____ received by this Authority on _____</p> <p><input checked="" type="checkbox"/> the claims:</p> <p>nos. _____ as originally filed/furnished</p> <p>nos.* _____ as amended (together with any statement) under Article 19</p> <p>nos.* <u>1-7</u> received by this Authority on <u>11.12.2004 with letter of 25.11.2004</u></p> <p>nos.* _____ received by this Authority on _____</p> <p><input checked="" type="checkbox"/> the drawings:</p> <p>sheets <u>1/4-4/4</u> as originally filed/furnished</p> <p>sheets* _____ received by this Authority on _____</p> <p>sheets* _____ received by this Authority on _____</p> <p><input type="checkbox"/> a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.</p>
3.	<p><input type="checkbox"/> The amendments have resulted in the cancellation of:</p> <p><input type="checkbox"/> the description, pages _____</p> <p><input type="checkbox"/> the claims, nos. _____</p> <p><input type="checkbox"/> the drawings, sheets/figs _____</p> <p><input type="checkbox"/> the sequence listing (specify): _____</p> <p><input type="checkbox"/> any table(s) related to sequence listing (specify): _____</p>
4.	<p><input type="checkbox"/> This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).</p> <p><input type="checkbox"/> the description, pages _____</p> <p><input type="checkbox"/> the claims, nos. _____</p> <p><input type="checkbox"/> the drawings, sheets/figs _____</p> <p><input type="checkbox"/> the sequence listing (specify): _____</p> <p><input type="checkbox"/> any table(s) related to sequence listing (specify): _____</p>

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>1-7</u>	YES
	Claims _____	NO
Inventive step (IS)	Claims <u>1-7</u>	YES
	Claims _____	NO
Industrial applicability (IA)	Claims <u>1-7</u>	YES
	Claims _____	NO

2. Citations and explanations (Rule 70.7)

- 1 This report makes reference to the following document:

D1: DE 102 23 730 A (DENSO CORP) 6 February 2003
(2003-02-06)

- 2 D1 discloses (the references in parentheses are to this document) a:

radial plunger pump (10) for providing fuel at high pressure in common-rail fuel injection systems of internal combustion engines with a drive shaft (14) mounted in a pump housing (11), said drive shaft having an eccentric shaft section (17) on which a roller (18) is mounted, and with a plurality of pistons (70) arranged in a cylinder (12a, 13a) radially in relation to the drive shaft (14). A piston sole plate (71) is arranged on the ends of the pistons facing the roller (18), said piston sole plate contacting the peripheral surface of the roller (18), wherein the surface of the piston sole plate (71) contacting the peripheral surface of the roller (18) consists of

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	<p>a ceramic material (see D1, column 1, lines 30-37) .</p> <p>2.1 The subject matter of claim 1 differs from D1 in that the contacting surface of the piston sole plate consists of one of three alternative materials, namely, hard metal, a cast carbide material or a cermet.</p> <p>The subject matter of claim 1 is therefore novel (PCT Article 33(2)).</p> <p>2.2 The problem addressed by the present invention may therefore be considered that of providing a more reliable radial plunger pump (see the application, page 1, paragraph 3) .</p> <p>2.3 The solutions indicated in 2.1 above are not known from the searched prior art. A combination of D1 with another prior art document would also be non-obvious to a person skilled in the art, since the prior art contains no suggestions that would induce a person skilled in the art to modify the radial plunger pump known from D1 so as to arrive at the subject matter of claim 1. Further, the three materials claimed in claim 1, assuming greater hardness in all cases, would lead to improved wear resistance. Claim 1 therefore involves an inventive step (PCT Article 33(3)).</p> <p>2.4 Claims 2-7 are dependent on claim 1 and therefore likewise meet the PCT requirements for novelty and</p>

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inventive step.

- 2.5 The invention is industrially applicable in the field of pumps (PCT Article 33(4)).